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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/686,037	10/11/2000	Clayton L. Holstun	10002302-1	5923
22879	7590	04/28/2004	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			FEGGINS, KRISTAL J	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 04/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/686,037		Applicant(s) HOLSTUN ET AL.	
	Examiner K. Feggins		Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 13 March 2003.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-7,9,10,13-20 and 33 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-7,9,10,13-20 and 33 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____. 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____.
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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7, 9-10, 17 & 18 are rejected under 35 U.S.C. 102(b) as being anticipate by Ando et al. (EP 0 835759 A1, IDS).

Ando et al. disclose the following claimed limitations:

- * regarding claim 1, a printhead for ejecting drops of a fluid onto a medium during movement along a scanning axis (pg 7, lines 15-24, fig 1)

- * a plurality of chambers for controllably ejecting the drops (Abstract, figs 1-3);

- * a nozzle member/nozzle plate, 101/ attached to the printhead and defining a wall of each of the chambers, the nozzle member having a planar surface/surface of nozzle plate/ positionable adjacent the medium (figs 1, 22, 23, 27-29, pg 7, lines 29-35, pg 13, lines 14-19, pg 15, lines 1-8);

- * a plurality of nozzles formed in the nozzle member and in fluidic communication with each chamber, wherein certain ones of the nozzles have a nozzle axis tilted along the scanning axis (figs 1, 22, 23, 27A, 27B, 28, 29A, 29B, pg 7, lines 29-35, pg 13, lines 14-19, pg 15, lines 1-8);

* regarding claim 3, wherein the nozzle axis is tilted so as to deposit during consecutive fluid deposition operations drops from an individual one of the plurality of nozzles substantially along a printing axis parallel to the scanning axis (pg, 15, lines 28-51, pg 16, lines 3-45, figs 1, 22, 23, 27A, 27B, 28, 29A, 29B).

* regarding claim 4, wherein the planar surface/surface of nozzle plate/ is positioned generally parallel to a surface of the medium being printed (figs 1, 22, 23, 27A, 27B, 28, 29A, 29B).

* regarding claim 5, wherein the planar surface/surface of nozzle plate/ is coplanar with a printing plane of the medium (figs 1, 22, 23, 27A, 27B, 28, 29A, 29B).

* regarding claim 6, wherein the certain ones of the nozzles (figs 27-29) have a non-circular bore through the nozzle member (figs 1, 23, 27A, 27B, 28, 29A, 29B).

* regarding claim 10, wherein the non-circular bore is symmetrical about the scanning axis but asymmetrical about a medium advance axis orthogonal to the scanning axis (figs 1, 22, 23, 27A, 27B, 28, 29A, 29B).

* regarding claim 13, wherein the bore/nozzle hole/ has the shape of a pie with a wedge removed (22A) for the purpose of discharging the obtained mixture for accurately expressing the gradation (p. 14, lines 35-36, figs 22A, 23, 27-29).

* regarding claim 17, wherein the composition of the nozzle member/nozzle plate (101)/ is substantially uniform (figs 22A, 23, 27-29).

* regarding claim 18, further including a supply of a fluid fluidically coupled to the plurality of chambers (pg 7, lines 29-35, pg 13, lines 14-19, pg 15, lines 1-8, figs 1, 22, 23, 27-29).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over anticipate by Ando et al. (EP 0 835759 A1) in view of Lorenze, Jr. et al. (US 5,461,406, IDS).

Ando et al. disclose all of the claimed limitations except for the following:

* regarding claim 2, wherein the nozzle axis is tilted so as to deposit during a single fluid deposition operation a main drop and at least one satellite drop from an individual one of the plurality of nozzles in substantially the same location on the medium

* regarding claim 7, wherein the nozzle axis is tilted between 0.2 degrees and 1.4 degrees from vertical.

* regarding claim 9, wherein the nozzle axis is tilted between 0.4 degrees 2 and 0.9 degrees from vertical.

Lorenze, Jr. et al. disclose all of the claimed limitations except for the following:

* regarding claim 2, wherein the nozzle axis is tilted so as to deposit during a single fluid deposition operation a main drop and at least one satellite drop from an individual one of the plurality of nozzles in substantially the same location on the medium (col 6, lines 18-37, 47-68, col 7, line 8-col 9, line 5) for the purpose of eliminating misdirected satellite droplets.

* regarding claim 7, wherein the nozzle axis is tilted between 0.2 degrees and 1.4 degrees/-2.5° to +4.5°/ from vertical (col 7, line 48-col 8, line 5, figs 5-7) for the purpose of eliminating print quality defects.

* regarding claim 9, wherein the nozzle axis is tilted between 0.4 degrees 2 and 0.9 degrees /-2.5° to +4.5°/ from vertical (col 7, line 48-col 8, line 5, figs 5-7) for the purpose of eliminating print quality defects.

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to utilize nozzle axis that is tilted so as to deposit during a single fluid deposition operation a main drop and at least one satellite drop from an

individual one of the plurality of nozzles in substantially the same location on the medium; a nozzle axis is tilted between 0.2 degrees and 1.4 degrees from vertical; and a nozzle axis that is tilted between 0.4 degrees and 0.9 degrees from vertical, taught Lorenze, Jr. et al. into Ando et al. for the purposes of eliminating misdirected satellite droplets and eliminating print quality defects.

5. Claims 14, 16, 19 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando et al. (EP 0 835759 A1) in view of Mantell et al. (US 5,731,827).

Ando et al. disclose all of the claimed limitations except for the following:

* regarding claim 14, wherein the plurality of nozzles are grouped into a set of odd nozzles and a set of even nozzles, and wherein the nozzle axes of each of the odd nozzles and each of the even nozzles are tilted in the same direction along the scanning axis.

* regarding claim 16, wherein the drops of the fluid are ejected at substantially the same firing frequency during movement in both a forward and a rearward direction along the scan axis.

* regarding claim 19, wherein both the supply of the fluid and the printhead are mounted in a print cartridge moveable along the scanning axis.

* regarding claim 20, wherein the printhead is mounted in a print cartridge moveable along the scanning axis and fluidically coupled to the supply of the fluid positioned in a different location.

Mantell et al. disclose the following claimed limitations:

*regarding claim 14, wherein the plurality of nozzles are grouped into a set of odd nozzles and a set of even nozzles, and wherein the nozzle axes of each of the odd nozzles and each of the even nozzles are tilted in the same direction along the scanning axis (col 9, lines 45-65) for the purpose of obtaining optimum distribution of ink flow throughout the system.

* regarding claim 16, wherein the drops of the fluid are ejected at substantially the same firing frequency during movement in both a forward and a rearward direction along the scan axis (col 4, lines 30-36, col 5, line 66-col 6, line 24) for the purpose preserving printing throughput when resolution is increased.

* regarding claim 19, wherein both the supply of the fluid and the printhead (20) are mounted in a print cartridge (12) moveable along the scanning axis (col 4, lines 20-30, fig 1) for the purpose of expelling droplets of ink from selected ones of the printhead nozzles toward the sheet of paper.

Art Unit: 2861

*regarding claim 20, wherein the printhead (20) is mounted in a print cartridge (12) moveable along the scanning axis and fluidically coupled/by ink conduits or channels/ to the supply of the fluid positioned in a different location/of the housing (18)/ (col 4, lines 20-30, fig 1) for the purpose of carrying ink from the housing to the respective ink ejectors.

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to utilize a plurality of nozzles are grouped into a set of odd nozzles and a set of even nozzles, and wherein the nozzle axes of each of the odd nozzles and each of the even nozzles are tilted in the same direction along the scanning axis; drops of the fluid are ejected at substantially the same firing frequency during movement in both a forward and a rearward direction along the scan axis; both of the supply of the fluid and the printhead are mounted in a print cartridge moveable along the scanning axis; and a printhead that is mounted in a print cartridge moveable along the scanning axis and fluidically coupled to the supply of the fluid positioned in a different location, taught by Mantell et al. into Ando et al. for the purposes of obtaining optimum distribution of ink flow throughout the system, preserving printing throughput when resolution is increased, expelling droplets of ink from selected ones of the printhead nozzles toward the sheet of paper and carrying ink from the housing to the respective ink ejectors.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ando et al. (EP 0 835759 A1) in view of Kitahara et al. (US 6,048,052).

Ando et al. disclose all of the claimed limitations except for the following:

* wherein the plurality of nozzles are grouped into a set of odd nozzles and a set of even nozzles and wherein the nozzle axes of each of the set of odd nozzles is tilted in one direction along the scanning axis and the nozzle axes of each of the set of even nozzles is tilted in an opposite direction along the scanning axis.

Kitahara et al. disclose the following claimed limitation:

* wherein the plurality of nozzles are grouped into a set of odd nozzles (rows D, C and figs 1 & 9) and a set of even nozzles (rows B, A of figs 1 & 9) and wherein the nozzle axes of each of the set of odd nozzles (rows D, C and figs 1 & 9) is tilted/stagger/ in one direction along the scanning axis and the nozzle axes of each of the set of even nozzles (rows B, A of figs 1 & 9) is tilted/stagger/ in an opposite direction along the scanning axis (figs 1 & 9, col 1, line 61-64, col 2, lines 43-60, col 5, lines 20-24) for the purpose of providing an ink jet recording head capable of reducing relative displacement of dots among a plurality of nozzle opening rows to a smallest possible level.

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to utilize a plurality of nozzles are grouped into a set of odd nozzles and a set of even nozzles and wherein the nozzle axes of each of the set of odd nozzles is tilted in one direction along the scanning axis and the nozzle axes of each of the set of even nozzles is tilted in an opposite direction along the scanning axis, taught by Kitahara et al. into Ando et al. for the purpose of providing an ink jet recording head capable of reducing relative displacement of dots among a plurality of nozzle opening rows to a smallest possible level.

Response to Arguments

7. Applicant's arguments with respect to claims 1-7, 9, 10, 13-20 have been considered but are moot in view of the new ground(s) of rejection. Please see the above new rejection Ando et al., with regards to a movable ink jet head having a plurality of chambers for controllably ejecting the drops, a planar surface of a nozzle plate attached to the printhead and defining a wall of each of the chambers, the planar surface of the nozzle plate surface positionable adjacent the medium; and a plurality of nozzles formed in the nozzle member and in fluidic communication with each chamber, wherein certain ones of the nozzles have a nozzle axis tilted along the scanning axis.

Communication With The USPTO

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Feggins whose telephone number is 571-272-2254. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



K. Feggins
April 20, 2004